1: Bowen-Jones et al. K-5 (1955-1958) 1961
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They seem to be largely devoted to cereals and potatoes, and in general give relatively poor crops. These soils are in several areas widely abandoned because they are uneconomic to work. 134 311

SOIL NEEDS

The needs of a soil, for the improvement of its fertility, are not simple to assess, and in the Maltese Islands at present they are not known. A fertile soil is considered as one which is in the optimum condition for the growth of crops, and this is dependent on a variety of factors, physical and biological as well as chemical. Air and water must be available, and man by cultivation and irrigation attempts to influence their disposition to favour his crops, just as by using fertilisers and weed or pest killers he attempts to influence the chemistry and biology of the soil.

PHYSICAL NEEDS

A soil which has a poor physical structure may be unable to support good crops, because water cannot be conducted to the plant easily enough, or because the soil aeration is poor. The heavy clay soils of the Fiddien series have poor structure, and it probably is the correlated difficulty of wetting the soil rather than the chemistry of the soil material (which often has a rather high concentration of exchangeable sodium and soluble salts) which causes it to be nearly useless for agriculture.

In the majority of cases the Maltese soils have a reasonably good structure, and the only other soils which appear to be ill-favoured are the heavy-textured soils of the Xaghra series. In this case the subsoil is often very compact indeed, and the separations between structural units are minimal. However, where such soils are well worked, and more particularly where they are irrigated, the structure seems to be much improved, partly no doubt because of the increased and active microfauna. While irrigation is probably difficult to extend, the use of improved cultural practices on these soils would probably produce an increase in the soil organic matter content and improvement of the structure. Among such practices the use of nitrogenous fertilisers, use of improved rotations, encouragement of root growth, avoidance of oxidation of root-derived organic matter through unnecessary turning over of the soil, and the avoidance of pulling cereals as a method of harvesting, might cause considerable improvement. The application of animal manure in irrigation water as already practised locally in Malta also appears to be effective in increasing organic matter content of the soil. 134 242

One of the chief problems of all crops in the Maltese Islands, is water. Certain of the lighter textured soils are extremely dry, and conservation of rainwater rather than extension of irrigation must be the answer because domestic water needs are already difficult to satisfy. Apart from practices designed to diminish evaporation loss, especially early removal of weeds by hoeing, it is probable that increasing the organic matter content would considerably increase the ability of the soil to hold water. But another simple possible method would be to marl some of the lighter soils with the calcareous clay, e.g. Fiddien heavy clay, which is not in agricultural use. (This would in addition possibly make more nutrients available.) 134 [312]

As far as aeration is concerned, it seems unlikely that it is deficient in many soils at present; but use of a rototiller (common in Malta) is believed to decrease aeration, and this could be investigated quite simply. It is possible that an excess of soil CO_2 would be beneficial in calcareous soils, reducing the pH of the soil solution to a level at which there is greater availability of most nutrients; and particularly those, such as phosphorus, which are likely to be deficient.

CHEMICAL NEEDS

Despite some other possible deficiencies it seems likely that nutrient

[TEXT CONTINUES ON P. 97]

1: Bowen-Jones et al. K-5 (1955-1958) 1961
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B. Crop Distributions

FIELD CROPS

CEREALS - WHEAT and BARLEY (*Qamh and Xgħir*)

As the land use maps show (Figs. 71 and 72), cereals are grown in all regions of the Islands. Of the grains, wheat and barley alone are of importance. Some maize and millets are still grown and a few fields of sown oats were observed. *Mixta* - a mixture of wheat and barley - is now rare, although self-seeding produces some mixtures difficult to distinguish except by close examination. The practice of sowing spoilt or 'bottom of the bag' grain on odd patches of soil that would otherwise bear nothing also produces unexpected results.

Many different varieties of wheat and barley are grown - naked and bearded, short and long-awned, with short, stiff and long, weak culms. So-called 'Maltese' varieties such as *Qamh ta'Susa* and *ta'Bla Sifa*, have little homogeneity except that the wheats are all hard, bearded types. Introductions are mainly of durums from Canada. The local barleys are poor in type - short-eared, small-grained, 'dry' varieties, although the poor results are obviously partly explained by their use for cropping the harsher lands. The new barleys are also mainly of North American origin and selected for early maturation. This latter characteristic is especially of value in an environment in which barley may dry and shatter rather than ripen - this has been observed even as early as March. In so far as barley is a residual land crop, however, then innovated varieties would seem to be difficult to establish and popularise - especially since the farmers on the poorest land are the least able to indulge in experiment.

That the importance of cereal cultivation remains so great, in spite of growing dependence on imported bread grains, seems strange at first sight. Information supplied by local mills suggests that human consumption of local cereals is very small, but quantitative estimates cannot accurately be made at present. Little is known of the relative importance of domestic subsistence on the farmers' own grain crops. Davy, in 1842 (1), and witnesses before the Royal Commission of 1911 maintained that production was mainly for domestic consumption. This is still obviously true for some vegetable crops and poultry but, in the present period of continued transition from peasant farming towards commercial farming, is difficult to evaluate for cereal production. For general purposes we may however presume the validity of the assumption that Maltese-grown grains have become less important for human food. No significant amount, it is generally agreed, is used for distilling and brewing. The former is severely restricted by law, and the latter by the general unsuitability for malting - unevenness of sample is a major difficulty - of local barley. For use there then remains only production for livestock fodder - particularly for horses and cattle, although the value of a grain ration for pigs is becoming more apparent with the introduction of better breeds such as the Large White. Given this situation, the comparative ease of grain-growing in the usual rotations practised, and the difficulty of finding alternative crops for some hardland areas, results in the survival of what has been called *grande culture* - land use of which would seem to be, in many regions at least, unnecessarily extensive.

The matter of rotation is fairly simple. Debono (2), in 1911, pointed out that, after previous manuring and vegetable growing - 'there is only the sowing and the crop comes by itself. So that whether there be duty or no duty, wheat will always be cultivated here in Malta, unless there is a revaluation in the rotation of crops'. A contemporary example may be taken from a farm at tad-Dahla. On the poorer land, wheat is grown alternate years with sulla. On the better land, potatoes and vegetables are the main crops and wheat, sown incidentally as a rotation crop, then gives yields of 25-28 cwt. per acre - double that on the other fields. Any change in the proportion of wheat to other crops under this system of farming could only be a consequence of an agricultural revolution.

More complex is the importance of the grains as hardland crops. Basically, wheat and barley are dry farming crops in Malta. Without irrigation, even away

[Text Continues on p. 197]

1: Bowen-Jones et al. K-5 (1955-1958) 1961
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for wind breaks, covered forcing beds, crop supports, etc. Livestock harness is simple in type consisting of head harness and collar. Working bullocks, now rarely used, are also equipped with collars for traction but the guiding reins are attached to the horns. Country carts are unsprung, wooden frames resting directly on the metal axles. That the ruggedness of their construction is only equalled by the toughness of the draught animals is evinced by their presence on places such as Dingli Undercliff, or the cliffsides of the Wied il-Luq (Buskett).

The solidly built stone huts or *orfa* that are to be found on most holdings may be regarded as part of the farmers' 'equipment' rather than his habitation. The simplest and most numerous are simple one-roomed cubes, some five yards square, strongly constructed, usually of worked stone blocks with wood and *forba* roofs. These 'blockhouses', for such they appear, serve as storehouses for implements and crops, for guns and birdcatching equipment, as well as for shelter during the 'siesta' hours and bad weather. Their cost in construction labour, and the pride that does into the simple furnishing of what is the farmers 'den', as well as the deceptive appearance of dispersed settlement that they give, suggests that further investigation into their origins might prove valuable. In general terms, they seem to be a natural response to the marked concentration of settlement in the casals. They are far less numerous in the western region of more recent and dispersed settlement. The larger, two-roomed and two-storied types are used mainly as summer working residences, when a whole family may move out of its casal to the main holding.

These implements and types of equipment are one facet of the complex of traditional cultivation techniques - techniques based on the intense and continuous application of uncosted hand labour. A brief examination of the working characteristics of some of the implements is a necessary introduction to a discussion of general cultivation techniques.

The *moħriet* (Plate XIX) is used as an animal-drawn hoe rather than as a plough proper. It is light and can be carried by the cultivator along narrow field paths and across rugged terrain. Its negotiability is limited only by the ease of access demanded by the draught animals. The 'rotavator' (Plate XX) alone of modern mechanical implements can rival it in this respect. On coarse soils, often only a few inches deep, cross tilling by hoe or *ard* seems perfectly satisfactory for tilth making. A vertically applied tool such as the true spade cannot be utilised in such soils, while all but the simplest mouldboard ploughs are too clumsy for use in small terraced fields. Both *ard* and hoe are used in garden rather than field style and their only disadvantages lie in the slowness of the work performed. Here lies the especial advantage of the rotavator that can, under reasonable conditions, be used for tilling six *tmien* of land a day as compared with about two or three for the *ard* and one for the hoe. (Figures are necessarily approximate averages.)

Cultivation techniques and the farming landscapes which they have produced are now in a critical stage of development. For millennia, a slowly increasing population has been utilising the natural land resources more and more intensively and also supplementing them by artificial works. Until the early nineteenth century, social and tenurial obstructions to full land use on the one hand, and wealth derived from the overseas possessions of the Knights of Malta on the other, little affected the basic land hunger of the rural community. During the period of British occupation, however, externally derived income has brought with it more and more non-agricultural activity. Opportunities for non-farm work have increased and so has socio-economic dissatisfaction with arduous and limited rural life. The stage has now been reached at which land reclamation and land abandonment, intensification of effort and neglect, are proceeding simultaneously. An examination of those landscape features which are products of farming techniques suggests that this stage is now critical.

Land reclamation and the extension of the cultivable area are still going on. At several points on the Delimara peninsula, material is being carried from the cliff foot and from old huts and dwellings and spread over the existing thin and discontinuous soil cover. On this, sulla as a soil building leguminous crop

[See page 306 -- ANALYST]

1: Bowen-Jones et al. K-5 (1955-1958) 1961
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is then sown. Much of the resultant poor crop is hoed in, and then the humus enrichened tilth ploughed and put under rotational farming. At ta'Denfila, on the Upper Coralline tablelands, terrace walls are constructed from the larger boulders, and soil garnered from crevices and hollows then packed along and above the new walls. Fruit trees are planted in this new soil zone so that root development will both hold the soil and accelerate disintegration of the underlying rock. Stones are cleared from the remaining area, the rock floor chipped away, and leguminous crops such as broad beans are sown. When chemical weathering has sufficiently deepened the thin soils, and the humus content has been increased then normal ploughing is introduced.

On a smaller scale may be observed the building up by hand of 'perched' fields which, as at the Wied Buqana (103)* north east of Mtarfa, may stand 6 or 8 feet above neighbouring fields and which, with their red soils, contrast markedly with the surrounding white and yellow lands. Here, the material is derived both from Wied Qleigha silt and from town refuse. Not only in these areas but in many others as around the Wied il-Hallelin in the Southlands, on the interfluves of the Wieds Dalam (274) and Has-Saptan (285), and near Armier Bay (6) in the north-west, this age-old land making can still be observed. Less important but still practised, as near il-Marnisi (275), is the process of chipping small fields out of the solid rock, and the slow conversion of inorganic aggregates, capable only of hydroponic use, into real soil. (A European analogue can be found in Spanish Galicia.)

Distinct from these creative processes, are the techniques of laboriously utilising to the maximum the existing natural resources. First there is the practice of using soil pockets and crevices which for the most part would be quite uneconomic to work on any commercial evaluation of effort. On all the Upper Coralline lands small pockets of weathered material - Terra Rossa - lying between great rock platforms and boulders are remarkably well utilised. Barley, peas and broad beans are typical crops as at Xaghra tal-Buskett. At il-Wejdar peas are sown in karst crevices and give surprisingly good yields. Larger clefts and pockets are usually used for tree crops. Carefully tended peach trees may be observed in a 4-feet wide and 14-feet deep landslip cleft on the Upper Coralline cliff south of the School Mater Admirabilis (Rabat). On the Victoria Lines Scarp at Tarġa Gap (95) a solitary lemon tree can be seen, carefully sheltered by cane fences in a small soil pocket surrounded by a great area of karst.

These are minutiae, but they illustrate the high intensity of resource use. Larger depressions in the Upper Coralline as at Hofret ir-Riżż (75) (Fig. 111C) have been given special attention. Here, irrigated crops are intensively grown in the deep soils of what is mainly a shallow solution hollow cum collapsed cavern. Dry wied basins having subsoil water as at the eastern Wied Musa (Fig. 102A) form oases in barren karstland. On a still larger scale there are basins such as that of ta'Saliba (34) (measuring about 400 yards by 800 yards) in which dry and irrigated cultivated lands are inextricably intermingled with small karst hills.

A different type of utilisation is that which notes and takes advantage of minor differences in environment. Where wied channels are wet and marshy for most of the year, as in the Upper Wied ta'l-Isqof (128) and in lower Wied Has-Saptan (285) then canes, bullrushes and sward grasses are encouraged, tended, and cropped. Where, on the other hand, wied channels are wider and less well watered, then cultivation has spread down from the neighbouring terraces. Protection from storm-water is obtained by the building of longitudinal protective walls in the channel itself as in parts of the Wied is-Sewda (194) and the Wied ta'San Martin, and Wied ta'Ghajn Rihana (42). Occasionally, as in the Wied tal-Qleigha (99), a further lower water channel has been artificially cut in the wied rock floor for extra protection.

Most of the storm water dams and soil traps are carefully sited at nick points in the long profiles. Examples of this conservation work may be found at

*A number in brackets following a place name refers to Figs. 69 and 70.

242 311 the heads of Wied Babu (219) and in the Santi Gap (57) in Malta and in the West-Central Region of Gozo. In such topographical pockets, the building of soil trap walls is sometimes extended to form walled orchards as at id-Dahla and the head of the Wied ir Rum.

241 311 When we turn to observation and consideration of cultivation reactions to minor topographical and geological features we are further reminded of the special relationship between tillage techniques and the soil. Bearing in mind the points noted in Chapter III B and the picture we have drawn of the physical and social environment in which Maltese agriculture has developed, we are forced to the following conclusions.

The economic necessity for the utilisation of virtually all land resources and indeed for creating some of them, together with the physical need for basing all farming practice on soil and water conservation techniques, have until very recently rigidly controlled the details of tillage. Fragmentation, a perfectly rational response to circumstances, has intensified the physical sub-division of the land. The majority of fields in Malta and Gozo cannot easily be worked except by small highly mobile implements. In the conditions described above and in a climate which makes possible a great crop range, implements must also be capable of a great diversity of application. In order to keep up the terraces, work the fields and succeed in maintaining and even increasing the area of cultivable land, the cultivator has been committed to unremitting and arduous manual labour. His basic tool is the hoe, his natural development of it the non-soil-inverting *ard*-plough.

The recent removal, by the creation of new real and psychological opportunities, of part of the pressure that has long kept the farmers on the land has altered the traditional picture. Cartographic evidence of the 25-inch to the mile maps, surveyed in the 1880's and 1890's, shows that since that time little wasteland has been improved. The only known large-scale change in field patterns occurred during and after World War II in the central lowlands of Gozo as the result of airfield construction, but holding fragmentation has re-imposed sub-division on the landscape. Occupational statistics and case-study evidence all point the same way. As a result of this release of pressure, land neglect and abandonment are now irregularly removing the extremes of control of cultivation. Even more important, Malta has been affected by the new evaluation of tillage techniques which has characterised so much of the world. Under modern conditions, most improvements in cultivation techniques have been deliberately designed for the increase of productivity on the better and more easily worked lands. Rural depopulation of the hard lands which gained such momentum in nineteenth-century Europe is an inevitable concomitant of such increases in productivity and of the accompanying demands for higher standards of material consumption and an 'easier' life. In countries such as Malta, this means that a new equilibrium has to be established, existing and new techniques and implements have to be evaluated against established environments and actual or potential changes.

241 311 435 [242] Three examples from case-studies (Key letters refer to Chapter X E) can illustrate what this means in farmer's terms. The first (A, p. 337) concerns a part-time farmer in Region A II, Mellieha Isthmus. This cultivator corroborated other evidence that in the nineteenth century it was still common for 'dry' fields to be created out of wasteland. More recently it has only been economic to make irrigable fields. The method is virtually the same in either case. First a terrace is cut into the rock slope, and the stone rubble is then built outwards in 'made-ground' and held in place by a terrace wall. Soil, usually now from a building site, is then laid over the rock platform and stone infill. Such a field 2 *tmien* in extent in 1951 cost £150 in construction (almost entirely in labour) plus £50 for the transport of 20 truckloads of soil. The gross receipts from this irrigated [434] *campe artificiale* were £60 and £35 respectively for the first two seasons. A generation previously, such work would have been done more slowly by full-time farmers who themselves would have garnered the soil, but the market for irrigated vegetables would have been smaller. A generation hence, a cultivator will add to the costs of construction all the at present uncosted labour expended

1: Bowen-Jones et al. K-5 (1955-1958) 1961
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C. Husbandry

241 128 In this section, a brief examination is made of those elements in agricultural production not previously considered. A methodological problem arises from the fact that, as should be abundantly evident, farming in Malta is a complex in which it is most difficult to isolate the various elements. The method adopted here is to examine in general first arable farming, and then livestock. In the subsequent sections, an attempt is made to examine the general economic characteristics of Maltese farming and then to define the types of farms which exist in the Islands, with particular reference to the island of Malta.

242 As in all non-industrial countries with high population densities and limited resources, a paradoxical situation may be observed in Malta. The intensive application of manual labour and careful observances of the minutiae of traditional techniques are found alongside some instances of land neglect which offend all the canons of good husbandry. On the one hand are observed careful tillage sequences, a first shallow ploughing or hoeing to kill weeds, a second deeper ploughing one week later to break up the surface crust and 'stir' for aeration of the soil to a depth of some 6 to 9 inches, and a further ploughing just before sowing to produce a fine surface tilth. On the other hand can be seen hoeing and ploughing during periods of high wind during which steady and large-scale wind removal of the finer aggregates takes place. Similarly, single trees can be almost coddled, while orchards are most often neglected and, while village refuse and animal dung is carefully worked into the soil, little effort is made to discard inorganic rubbish or diseased and seeding crops and weeds.

This paradoxical situation is most clearly defined in the attitude to weed and pest infestation and to the use of artificial fertilisers. Weeds of many types occur everywhere, and their eradication is manifestly impossible as long as the areas of wasteland to be found in every region provide safe centres for propagation and diffusion. The very walls of Malta which line almost all the fields and roads shelter weeds and pests. Even if eradication is impossible control is not, and the inadequacy of present husbandry is a measure of difficulties both mental and monetary.

The most prevalent and damaging weeds are broomrape and *oxalis cernua*. The former is indigenous to Malta as a field weed, particularly in association with cereals and broad beans in the dry farming area. On the thin dry soils of these regions, broomrape competes, only too successfully, for the limited water available and for plant nutrient material. The total effect on yields and the negating of much of the effort put into leguminous crop rotations must be very serious. Chemical control seems unlikely, and the cultivators themselves are aggravating rather than ameliorating the position. One cultivator interviewed in Region C XVIIIa epitomised the situation. Complaining that 'the weeds are pushing us off the land' he pulled his sulla crop, carefully leaving his wild oats and broomrape to seed freely. It was not surprising that his immediate neighbour had given up farming.

Many similar situations may be observed. Partly they are to be explained by the diminished actual and psychological pressure on land resources. In the main however they imply a basic parochial ignorance left as a legacy from the more primitive past. A farmer interviewed in Region C XX e clearly illustrated the nature of the mental problem. On being remonstrated with, because while pulling his rust-infected broad beans he left the numerous broomrape plants to seed freely, he professed astonishment at our ignorance. Observation, he pointed out, showed that the root tissues of bean and broomrape were not only intermingled but conjoined. Obviously therefore *both* plants grew out of the planted bean and surface seeding had nothing to do with the weed infestation. The problem set is how to explain in a convincing manner to a medievally-minded farmer the following: 'The seeds (of broomrape) germinate in the soil if the fibrous roots of a congenial host plant are nearby. Otherwise they remain dormant . . . as long as 13 years. When the primary root or radicle of a germinating seed makes contact with a fibrous root of its host, it forms a nodule of tissue

1: Bowen-Jones et al. K-5 (1955-1958) 1961
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which becomes fused with tissues of the host. New roots and a stem of the parasite develop at that point' (1). The monetary problem results from the fact that once broomrape, or for that matter *oxalis*, infestation is severe, eradication by sterilisation means considerable expense and temporary loss of land.

The position as regards other aspects of phyto-pathology is even more serious. 'An intolerably large proportion of the field crops is being destroyed by pests and diseases' (2). An unpublished interim report of a Plant Disease Survey showed that c. 150 different diseases were found in one season in 1957 (3). Recent work by the newly established Plant Protection Unit indicated in 1958 that not only were old established diseases still virulent but that new ones, virus types in particular, seem to spread to the Islands very rapidly. Thus a fungus infection of grapes observed in August had been identified for the first time less than six months before in France. Pests are numerous and damaging. The only place where the author has ever seen large-scale infestation of a cereal crop by snails was in a barley field near Munxar (Region V) Gozo. They are also very destructive in the environmentally attractive globe artichoke patches found in so many wied bottoms. The Maltese practice of trapping or shooting virtually anything that flies may be amusingly reminiscent of Tartarin of Tarascon, but it does limit the controlling effect of bird life on some pests. Insect pests are even more important, ranging from the lethal onion thrips to the less spectacular but qualitatively damaging Mediterranean fruit fly and tomato red mite.

While it is essential for the sake of the internal economy that quantitative loss of production should be avoided, it is equally important that agricultural produce which might now or potentially be exported should be unblemished and free from disease. Thus the only countries which can offer markets for high priced early potatoes are *ipso facto* those in which regulations governing the health of imported produce are most severe and in which competition is most keen. The Department of Agriculture and more recently the Agricultural Advisory Service are thus confronted by very serious problems. The first step, taken mainly since 1955, has been to establish scientifically observed fact. Thus the phyto-pathological surveys already cited have been made; in 1957 a preliminary report on the meteorological possibilities of operating a potato blight forecasting service was prepared by Mitchell (4), and a plant protection adviser appointed. As Hopkins (5) has pointed out some plant symptoms may be attributable to a 'wide range of conditions varying from soil exhaustion to root or virus diseases'. The soil survey carried out by Lang (6) has considerably increased our knowledge, but more needs to be done before deficiency troubles of all kinds can be overcome. Meteorologically, the obscurity may be illustrated by the confusion caused by the frequent use of the word '*glata*' to mean frost or frost damage as well as 'blight'. Sunscorch, particularly through dew globules, followed by moulds which find optimum conditions in the high humidities and temperatures in plant level micro-climates is probably responsible for much of the so-called '*glata*' damage. The removal of obscurity by scientific investigation is an essential step but it is one which, figuratively, takes the investigator away from the farmer.

The second type of action required is the examination of crop types and varieties at present grown and the consideration of the possibility of introducing exotic types, varieties and strains. Hypothetically, this is no great problem inasmuch as the farmers of the Islands have in the past apparently shown themselves ready to experiment and able to recognise a superficially 'good thing' when they see it. One has merely to look at the publications of the *Società Economico Agraria* to realise how much experimental work has been carried on by enthusiasts. In 1848, a work on barley and vine varieties was published together with a consideration of tobacco cultivation. So too in other years. In practice many difficulties arise, mainly from the non-traditional nature of the changes which farmers are now being asked to make. Up to the end of the nineteenth century Malta was famous for the production of bitter (Seville) and blood oranges. The decline in the U.K. market for these types has led to the extensive grafting of sweet orange varieties on to bitter orange stock. That change was possible in terms of Maltese traditional husbandry. But as Hopkins

242 has pointed out (7), any further advance through the introduction of exotic and specially bred more productive varieties needs careful examination in that since 'nearly all citrus... is budded on sour orange stock... there is a great danger of the total loss of all trees should the *iristeza* virus be introduced'. The expertise needed in this type of development is not present in traditional husbandry.

Apart from the ecological and technical problems, lie the economic and social questions. The Maltese farmer is prepared to take experimental risks only so far as he can understand their consequences. Potato cultivation, only developed on a large scale during the last century, is now a very important commercial element on most farms. Having attained a reasonable level of success with Arran Banner as a quasi-early potato, even the most enterprising cultivators are reluctant to extend further hostages to fortune by trying new varieties. The efforts of the Agricultural Advisory Service in the crop selection field (8) are meeting with some deserved success but the nature of indigenous conservatism needs to be realised. Many Maltese farmers achieve reasonable results by the proper use of traditional crops and techniques. In those regions of the world where the level of productivity is much and unreasonably lower, for example in the mountains of Tuscany, or the paddyfields of Vietnam, rapid improvements can be relatively easily demonstrated. When, as often in Malta, second stage development challenges a traditional husbandry which is giving not unprofitable results, then resistance to change is much stronger. From one of the case-studies the common type of social resistance may be thus illustrated. On an irrigated holding carrots proved a profitable cash crop. The farmer was told by a returned emigrant that paraffin spray was very suitable as a weed killer. He chose a small patch, in his own words, 'where no-one could see what I was doing and laugh' and tried the new treatment. Eventually convinced of its efficacy, this farmer was able to observe the slow visual impression made on his neighbours.

Fear of failure in neighbours' eyes has to be put alongside a strangely humble pride which will cause a group of farmers to listen with genuine respect to the suggestions of an expert, to raise no queries, but also to take no action since, although the adviser must be right in general, his knowledge cannot on *a priori* grounds be applicable to anywhere in particular. Thus another farmer, rather than confess to an outbreak of true blight in a field-trial plot of a new potato variety, dug up the crop, sold it and reported total failure.

242 439 Illuminating also is the attitude to fertilisers and chemical aids to husbandry. All artificials are at present imported and used in conjunction with animal manure and town refuse. In 1954, before the main programme of agricultural research and extension, the relative importance of imported fertilisers was as follows:-

IMPORTS OF FERTILISERS 1954

	Volume	Value
Sulphate of Ammonia	1,834,000 Kg.	£40,983
Sodium Nitrate	150,000 Kg.	3,550
Phosphatic fertilisers	2,032 Kg.	43
Potassic fertilisers	2,000 Kg.	51
Other chemical fertilisers	100 Kg.	6
Organic manures	382 Kg.	101
(Copper Sulphate-Bordeaux mixture	-	6,038)

242 The overwhelming reliance on nitrogenous fertilisers is a result not of their proven efficiency but of an incorrect reaction, by cultivators possessing practically no scientific understanding of the processes involved, to new ideas of soil feeding. It seems probable for instance, that most Maltese soils have a low potassic content. Nitrogenous fertilisers cannot give their best results under these conditions and their over-use may result in further impoverishment of

1: Bowen-Jones et al. K-5 (1955-1958) 1961
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other plant nutrients. The Law of the Minimum is the ultimate control. Both sulphate of ammonia and sodium nitrate are extensively used on the potato crops although most of the added growth goes into production of foliage rather than of carbohydrate in the tubers. Lastly, under Maltese climatic conditions, the balance between the mineralisation of nitrogen and the maintenance of organic matter in the soil, judging from South African experience, seems hardly to be improved by the simple application of nitrates.

As noted in Chapter III, a great deal more work needs to be done on the problem of availability in the soil of plant nutrients and water before additive needs can be estimated. In the meantime the farmer just does not know, and uses fertilisers rather blindly, often extravagantly, in the same way that he administers the 'medicines' as he usually calls other chemicals. This is a highly dangerous situation because it can lead through disillusionment to even stronger resistance to new ideas. On many occasions we have met farmers who as a result of using Bordeaux mixture incorrectly and suffering accordingly have been inclined to doubt the value of the scientific approach as a whole. The moral, in so far as one may be discerned, is that any advice given must be overseen in its application and thoroughly understood by the farmer in order to prevent any failure due to misuse of that advice. Otherwise the situation will be worsened rather than improved.

Lastly, a consideration of the positive elements in land husbandry as at present practised. The crops grown in the Islands have already been considered in Chapter VII, and the physical environment for the growing of those crops in Chapters I-III. In general, Maltese farmers employ on non-irrigated land one basic crop-sequence which is, to a degree varying with the individual, regarded as a rotation of soil-building and soil-exhausting crops. A typical succession would be:-

First year	- September heavy manuring followed by winter potato crop.
	- April-July onions.
	- Summer fallow followed by ploughing.
Second year	- September-May vetches and/or beans followed by spring potato crop.
	- Possibly a small catchcrop of legumes with summer fallow.
Third year	- September-May cultivation for and growing of wheat crop.
	- Possibly a minor catchcrop of summer vegetables with summer fallow.
Fourth year	- September-April cultivation and growing of sulla crop.

There are many variations on this pattern observable. For instance, near tal-Gonna (223), a sequence observed on good land was:-

First year	- September heavy manuring - 96 bags of dung and refuse per *tomna*.
	- September-December winter potato crop with dressing of sulphate of ammonia, 1 bag per *tomna*.
	- January-April spring potato crop.
	- May-August summer fallow.
Second year	- September-April two crops of potatoes as in previous year.
	- May-August onions on watered land.
Third year	- September-May cultivation for and growing of wheat crop.
	- May-August summer fallow.
Fourth year	- September-April sulla.
	- April-September deep ploughing and heavy manuring.

On the other hand in the Central Region, C XVIII c, one farmer with 43 *tmiem* of dry land has at least 20 at any one time under cauliflowers. He has no rotational system as such but rather an intensive catch- and cash-crop sequence supported by heavy manuring and by the rather mysterious soil virtues of this region. He is thus enabled to harvest a cauliflower crop almost continuously

1: Bowen-Jones et al. K-5 (1955-1958) 1961
EZ6 Malta EZ6

242 from December to September during each year, from seven or eight different plant strains.

On irrigated land, an even more intensive succession of vegetables, cucurbits, tomatoes and potatoes is seen. Further variants resulting from the addition to the crop range of tree-crops have been illustrated in Chapter VIII.

Accessibility to markets, as well as general environmental conditions, produce the regional variations already discussed. On a smaller scale still, minor distinctions of climatic and soil types produce minute differentiations which are all-important to the Maltese farmer. Land husbandry may then be said to be controlled by the following forces. First, and particularly affecting the older generations, is the survival of a primitive urge to control land and to maintain it as the basis of subsistence. This now implies that cultivators who normally rely on sales of their produce do in large measure base their husbandry on non-commercial standards. The social and economic background already examined in Section II is thus responsible for making Maltese cultivators a pseudo-peasantry. A recent compilation of farmers' opinions and attitudes shows this very clearly (9). Secondly, and superimposed on the first factor, are the commercial forces which, through the demands of the market, are breaking down the old inbreeding of ideas. Because the internal market for agricultural produce is still rather undiscriminating and because marketing systems are still crude, the new demands on husbandry are partly inconsistent and partly uneven in their effects (Chapter X E). Thirdly, and because of the characteristics of these first two elements, the physical environment still dominates husbandry practice. In some countries, such as the United Kingdom, within broad limits one can say that available techniques, readiness to use those techniques and the dominance of the profit motive all combine to neutralise many environmental variations. In Malta this is not true.

Maltese farming, having already developed so well from a simple peasant basis is now faced by a last hurdle before it can play a necessarily major role in the economy of Malta. Traditional experience has now to be translated into a scientific idiom, application of 'rules of thumb' replaced by an understanding of the processes involved. Without that idiom and without that understanding, imported ideas and techniques will not survive transplanting. Given such a mental renaissance, good husbandry is possible to cultivators already capable of careful hard work.

232 Livestock husbandry, faces the same sort of problems as does land husbandry. The main difference results from the more concentrated impact of new needs on traditional methods. Little is known of Maltese livestock during or before the nineteenth century. John Galt, in 1812 (10), asserted that the first milch cows were introduced by the British in 1809, a statement later re-affirmed by Macgill (11). Boisgelin (12) and Giacinto (13) in 1805 and 1811 do little more than comment on the high quality and repute of the indigenous breed of asses and goats and on the poor quality of the sheep. Even in 1911 (14), the Inspector of Agriculture, F. Debono, was able virtually to ignore milk production, note the near extinction of the Maltese ass, and remark that cheap meat imports allowed farmers to concentrate on non-fodder crops. In the 1920's and '30's changes were slowly occurring but they did not accelerate significantly until World War II.

The Maltese livestock farmer cast in traditional mould is still controlled by land shortage. Only in Gozo is there some grazing and exercise space for animals, and even there the practice of stall feeding is dominant. While animal needs have increased with the change in emphasis from goats and sheep to cattle and from general purpose cattle to dairy cows, the Maltese farmer has not been able, for reasons financial, mental, and of space, to meet these needs.

A preliminary sample survey of the feeding of milch cows and goats made by Charlton in 1956 brought out the following points (15). Of the total sample of goat-herders, 80 per cent. relied on wasteland *xagħra* grazing to supply forage, this proportion being higher in Gozo than in Malta. We also know that very few cattle-farmers have adequate exercise yards and none have real pasturage. Goat and cattle farmers further rely to an inordinate extent on *ħaxix ħasin* - rough

2: Boissevain E-5 (1960-1961) 1965
EZ6 Malta EZ6

people to have the final say in the nation's vital means of production.'[1] These policies have a general appeal to labourers and are among the reasons for the party's popularity.

The Labour Party is closer to the worker than any of the other political parties. In this respect, its organization resembles that of the Church. As already noted, the MLP rests on its village and district organization. This has enabled the average worker to have a say of sorts, not only in his party's policy, but, when it was in power, also in the affairs of government. How he and his neighbours were able to manipulate the party structure to their advantage is a matter which will be discussed in greater detail in the following chapter.

During its period in office the Labour Party did much to improve conditions for the workers and the poor. This is another reason why many support it. It introduced many social benefits, including the extension of medical services, regular allotments of free food and social assistance allowances for the needy and aged. It also built many new schools, surfaced dusty roads and undertook other large public works projects which gave employment to many, besides benefiting the community. Moreover, the party did a great deal to improve agriculture by bringing in foreign experts who set up an advisory service and introduced new crops and techniques of cultivation. All these and the general atmosphere of activity which permeated the Labour Government, gained great popularity for the party and its leader.

There is yet another important way in which the MLP attracts many: it has attacked the established authority of Britain, the Church, the local captains of industry and the prosperous members of society. This outlook appeals not only to many poor and underprivileged persons, but also to the young and the uninfluential who are seeking to establish their personal independence and to make their mark on society. This opposition to authority and vested interests holds an attraction for many social 'misfits', such as the young 'Teddy Boy' element, the eccentrics and free thinkers. These find in the MLP a haven for their nonconformity to the social and moral teaching of the Church. Though social and religious stigma still attaches to them, many find it easier to bear in the company of others who have similar beliefs and problems. The Labour Party has thus provided social outcasts with a sense of

[1] MLP manifesto. See Appendix B.

234 654 pasteurized milk at about this same price to the general public, regardless of the administrative, collection and pasteurization costs involved and the losses on surplus milk wasted. The subsequent deficit is born by the Government exchequer and may therefore be regarded as a Government subsidy to the milk producer. Its effect in the past few years has been immense in that it has encouraged herdsmen all over the Islands to increase their production to the maximum at the expense of arable cash-crops (Cases I to IX).

232 654 (b) As part of the general policy to improve farming in the Islands and, at the same time, to eradicate certain livestock diseases the Government has made available to herdsmen an exchange scheme whereby they may exchange diseased animals for newly imported stock. This has also included goats, some dozen of which could be exchanged for a cow. Along with this stock improvement policy has gone official limitation on the number of animals entering the Islands since the present overstocking is regarded as undesirable. Farmers have however not been slow to find ways round such limitations - one popular method of acquiring a cow having been, for example, for a farmer to buy in weak and ailing goats and effect an exchange of these for a healthy imported heifer.

654 (c) Of considerable help to the arable farmer as well as the herdsman has been the programme of 'Loans and Grants' ('Self u Donazzjonijiet') by the Government to farmers for the purpose of making capital improvements in the farm and its operation. The low-interest loans have been particularly popular and have already enabled many farmers to buy, for example, their own rotary cultivators (Case II). One important limiting feature in these loans has been the ignorance on the part of many farmers of the system and the suspicion felt by others of something new and not clearly explained.

(d) Of particular concern to the arable farmer have been the various distributions of free or subsidized seeds, potatoes, tomatoes, etc. In some cases the aim has here been to popularize some new departure from custom such as a variety of early potato new to Malta or to introduce farmers to the 'Balanced Ration' ('Ghalf Bilanċjat') experiments of the agricultural authorities.

242 654 (e) In this same category of aids to farming comes the recently-formed Agricultural Advisory Service, which has itself been responsible for many of the new moves mentioned and also for the series of public lectures to farmers (Section 4), which have been part of the effort to improve farming in the Islands by providing an up-to-date research

242 and information centre to which the farmer may turn for
654 advice and material help. Much discussed by the farming community in 1958 were the plans for a proposed artificial insemination centre to help in the improvement of stock in the Islands along with the provision of an efficient stud (Section 4). The early stages of the Advisory Service are outlined in B/252.

178 Thus a lot has been done and a great deal more said
241 about farming in Malta and its improvement and modification
654 to bring it more closely into line with present conditions
181 both in Malta and abroad. The farmer's characteristic conservatism has to be overcome at every stage (v. Section 4)
[234] but where he sees a clear prospect of quick profit he is not slow to move. The outstanding example of this is the guaranteed milk sale through the M.M.U. which, in the space of a few years, has produced a revolution in dairying in the Islands.

433 The herdsman is not concerned with an increasing milk
654 surplus in the Islands as a whole. While the guarantee
234 remains he will continue to put every effort into selling more gallons each day and to subordinating cash-cropping to fodder production in his fields (Cases I to IX). It is certainly keeping him in farming but it is not, apparently, having the same effect on his son.

SECTION 3 : The Farmer and Living Standards

MONEY

433 In the early nineteenth century the Maltese farmer was
434 a 'peasant' in the sense that he was engaged in small scale
178 subsistence farming with the help only of his family.
[175] Economically and socially he saw little beyond his family, farm and village. There were very few wants which could not be supplied at home, or at least within the village. In 1958 one heard of a now almost mythical Maltese countryman of a hundred years previously whose annual expenses in terms of money totalled 6d : 3d for paraffin and 3d to have his horse shod! Today, the farmer who spoke thus of his predecessor receives about £300 for the milk which he sells each year (Case I) as but one item in a present annual turnover of several hundred pounds which characterizes modern 'commercialized' agriculture in Malta where the farmer produces for sale. He still provides much of the food for his family but he is no longer a peasant.

178 Thus the place of money provides a basic distinction
436 between the present 'commercialized' position and that which
437 prevailed under traditional peasant farming. A century ago money and financial transactions in general featured only

654 (a) to decide which crops, animals, feeding stuffs, machinery, methods of farm management, etc., are most likely to improve Maltese farming conditions, and

(b) to pass this information to a conservative and doubting farming public.

654 242 A central feature of official policy since 1956 has been the Agricultural Advisory Service (B/252), modelled on the parallel organization in the United Kingdom. In Malta this body has aimed to co-ordinate research and experiment with encouraging the farmer to adopt proven results. Within a short while of its inception the Service was concerned with detailed investigations into pig rearing, poultry feeding, dairying, potatoes, tomatoes, fertilizers and other agricultural topics in the Islands (B/252, pp.3-4). At the same time a great deal of importance was attached to demonstrations and lectures to farmers. In addition broadcasts were made over the Rediffusion system and these were supplemented by a certain amount of printed publicity.

654 242 544 232 The easiest part of the programme of lectures and demonstrations was to get farmers and others to attend the meetings. Those who stayed away did so either because they could not be available at the appointed time or, more usually, because they could not be persuaded that foreign experts could know anything applicable to farming in Malta which the local farmer did not know already. The attitudes of those who did attend was revealing. In many cases the novelty of the event was the attraction but there was also a large element of reasoned interest. Attendances varied from a few dozen farmers in some of the smaller villages to 200 in Xaghra and other large rural settlements, while, in January, 1959, no less than 700 people assembled in Rabat to be lectured by four of the specialists then working with the local Department of Agriculture, and to see a film on "Clean Milk". The reactions of this audience were typical of the response to the whole range of lectures and demonstrations and illustrate clearly the kind of problem which any would-be improver of agriculture can expect to have to face in Malta. There was, significantly, only one Maltese woman in the audience at Rabat of which some two or three hundred appeared to be non-farmers and concerned rather with free coffee in the interval than with the topics of the lectures. Of the rest, however, some farmers had made considerable journeys to attend while more than a few of these had never set foot in a meeting hall or attended anything in the nature of a lecture or lesson in their lives. For them it was a 'Sunday-best' outing. Even the bravest

654 of those present could not however be persuaded to ask any
242 questions of the 'experts' or to develop any discussion,
544 although everything not in Maltese was translated copiously.
232 They were over-awed by the proceedings but were not slow to seize on topics raised by the speakers for future discussion among groups of farmers. The average age of those present was lower than that of the full-time farming population on account of the presence of large numbers of disinterested village youths and young men. But the true farmers themselves paid attention to what they were told and were especially impressed by the film.

Some of the points raised were dismissed as "not suitable for Malta". Some suggested measures were "interesting but unremunerative", notably the efforts, demonstrated in the film, to achieve cleanliness in milking. The farmer could not readily comprehend how he was to profit financially if he were to add what to him were needless tasks to an already heavy time-table. Yet, on the other hand, he was sceptical when told that many of the jobs which he is accustomed to performing could be replaced by more efficient methods. Being unable to read of farming outside Malta the illiterate believes that no methods could be better than those tried, tested and taught by his father and grand-father before him. Hence a major part of the work of an advisory service is "to create conditions which will give the farmer confidence in the advice given. The adviser must be above creed or party and honest in all his dealings. In addition, however, some inducement must be offered to the farmer to accept advice and the most powerful inducement that has yet been found is money - cash - a better price"[39].

654 One example of this inducement in practice was
232 afforded by the study of pig feeding using balanced rations which was undertaken by the Agricultural Advisory Service early in its career. Haesler was able to show that "the high mortality rate in small pigs can be considerably reduced, and what is more important, losses in pig keeping have been turned into profits" (B/252, p.3). The farming public was assailed with Maltese-language leaflets[40] showing how the traditional pig feeding patterns were both wrongly balanced and generally excessive in quantity and encouraging pig breeders to invest in the prepared balanced rations ('Ghalf Bilanċjat') then on the market. This improved diet would, it was claimed, not only produce a better pig but would result in reduced costs of feeding. This prospect appealed to the farmer, who hastened to purchase the balanced ration particularly as such rations were subsidized by the Government[40] in order to encourage

654 232 their adoption. Sales soared after the ration appeared and the idea spread rapidly from farmer to farmer. Unforeseen difficulties soon emerged however and threatened to make the ration unpopular among pig breeders as quickly as it had become popular a short while before. Partly on account of ignorance and illiteracy and partly because of the lack of the correct kind of propaganda farmers began to find that the ration was not the magical remedy to their pig problems. A sample investigation, by the writer, in Gozo among farmers who had purchased the balanced ration showed that some of them had understood it to be a kind of medicine to be given in addition to the diet normally fed, others treated it as one item of the feed and mixed it with their normal ration to the pigs, while most common of all was the complaint that "I've been feeding the balanced ration for a week and there is no sign of the promised improvement so I'm using no more". Individuals of this latter inclination not only stopped purchasing the ration themselves but spread ugly rumours about it among their fellows. None of those with such complaints would consider approaching the Officers of the Advisory Service - as they had in fact been invited to do in the leaflet[40]. For them the new pig feed was a failure.

654 829 242 232 Illiteracy produces a feeling of inferiority in most cases which makes the farmer too timid to approach a department or an official on some problem. Moreover the written word is for them suspect. Therefore if they are to be persuaded to adopt new techniques in their farming the instruction will have to be personal and followed up with further help and advice when difficulties and lack of appreciation of what is intended emerge. For these farmers lectures are too remote. Demonstrations of new crops or cultivation methods, etc. are more likely to succeed but are insufficient in themselves. Unfortunately a large qualified staff of visiting advisers would be necessary to supervise farmers at such an individual level. In Malta this is not yet available. Even if it were the farmers' trust would have to be gained and maintained at every stage. In the past such trust has been conspicuous but its absence with the farmer believing that everyone with whom he comes in contact is anxious to take advantage of his illiteracy for their own gain. There has been no-one to give him professional, impartial advice on farming and the new Advisory Service with its free information and other help to the farmer is still something of an unknown quantity. The Agrarian Society (B/286) has in the past been responsible for a certain amount of research on agricultural topics in Malta but does not appear

654 232 242

854 232 242 to have made its presence felt among the farmers themselves.

When a greater number of qualified personnel are available the Advisory Service and its various ramifications may go a very long way to improving Maltese agriculture and raising the profit-margin and therefore the living standards of the farming population. But in its early stages it has had to concentrate on the present farmers of Malta and Gozo who are, as has been emphasized, not only often illiterate but frequently near retiring age as well. The younger generation of farmers' sons, on whom the future of agriculture in the Islands will depend, have had to be overlooked. But if they cannot be persuaded to stay in farming the improvements accepted after great effort by the generation of their fathers will mean very little.

241 829 [575] [874] In Malta and Gozo there is nothing to compare with the Young Farmers' Clubs of the United Kingdom; nothing in fact to serve as a nucleus around which an enlightened younger farming generation might develop. Neither is there anything in the Islands of the nature of an agricultural college where young farmers might be trained. It is possible that the primary schools in rural areas might provide a means of contact between the agricultural authorities and the children of the farmers but the difficulties which would arise are clear. Nevertheless such an approach as this might do something to alter the attitude to farming which is one of the biggest problems facing the industry in the Islands today. If farming and other rural children could be shown that farming is no less respectable than the variety of alternative occupations it might persuade them to stay in the industry long enough to build upon the improvements now being introduced.

654 234 As was clear in the case of the balanced rations for pigs mentioned above the farmer is not slow to take advantage of a financial subsidy. The major example of this is the recent growth of the dairying industry with the guaranteed price to producers for milk sold to the M.M.U. (Section 2). In short, official policy here has been to make milk production profitable for the producer but at the same time to maintain a low consumer price for the pasteurized product - at a level producing a loss the cost of which is borne by the Government. The totals [433] of milk purchased from producers by the M.M.U. reflect the rapid increase in this aspect of farming in recent years. Milk surpluses (partly losses) also increased markedly as did the percentage of milk deriving from cows rather than goats[41].

CASE VII : Wenzu (A goats' and cows' milk producer with a small land holding.)

159 234 Like Case VI, Wenzu has been a goat herder and is now anxious to concentrate on dairy cows. At present he holds 4 Friesians, belonging to himself and his sons, but he wants to import Ayrshires. This cow, says Wenzu, is better suited to Maltese conditions, needing less feed than the Friesian and standing up better to long periods of confinement in cramped stalls. Wenzu became interested in cows when the Government forbade the selling of raw goats' milk in Valletta. For a time thereafter he sold bottled milk in the capital and then returned to selling raw goats' milk in still unclosed areas such as nearby Cospicua until that too came to an end with the evacuation in 1940. After the War he went back to cows' milk production and sold his output to the M.M.U. He acquired the Friesians through an exchange for inferior quality and diseased goats organised by the Government (one cow for 13 goats). At present, he says, cows' milk production is the more profitable ("Six cows will support a small family") but that this would not be so were it possible to give goats good grazing land at low cost. He reckons that good grazing saves 15/- per day on the fodder bill.

159 829 178 232 242 Wenzu's Case illustrates an important feature of the study of a predominantly illiterate section of society. This is the prominence of personality in the thoughts and actions of the individual. Unable to read and suspicious of what he may hear over Rediffusion, Wenzu relies on personal contact to a very considerable degree. This is clear from a brief survey of his life. He speaks nowadays of a certain Dr. MacFarlane whose veterinary skill and advice impressed him and who originally recommended him to keep Ayrshires. To listen to Wenzu talking of this "Scots Doctor" one gathers that Wenzu last spoke with him quite recently. In fact, however, Dr. A.M. MacFarlane was Superintendent Veterinary Surgeon in Malta some half a century ago! A Mr. Hurst gave him advice on bulls some 25 years ago while, much more recently, Mr. Ebejer Blythe of the Department of Agriculture gave him much valued information on lucerne as a fodder and, latest of all, Dr. Godfrey Alton, the veterinary expert, has become something of a hero for the injections he has arranged. Evidently, therefore, any improvements in Maltese farming have a greater chance of success if this element of personal contact - particularly in the cases of illiterate farmers - can be established. One man who will argue with one farmer for a morning on a single topic stands a greater chance of general success than has the big public lecture or even the practical demonstration.

*159 43 (iv) Potatoes are grown regularly for the home market in spite of price variations - reported as ranging between 50/- per qantar in 1956 and 8/4 in 1957.

(v) Home grown fodder and forage makes up c.80% of non-concentrate feed. Other crops make members of the partnership self-sufficient in foodstuffs (at a high level of consumption).

(vi) Annual sales of wine-grapes c.40 qantar.

(vii) The response to general variations in yields and prices is to maintain the general pattern of production. The syndicate has enough capital to survive periodic losses and therefore deliberately ignores fluctuations. The only alterations made in a planned cropping sequence result from natural hazards e.g. if a late crop of sulla fails as a result of poor germination, a rapid switch may be made to balck vetch.

C. Husbandry. General standards are good.

*159 ●242 (i) Soil maintaining rotations are carefully and consciously practised. Thus leguminous fodders are regarded as essential in arable farming.

(ii) Fertiliser application is heavy:
- Organic manure is applied for the first two years of a four year cycle at a rate of c.60 sacks per tomna.
- Sulphate of Ammonia is applied to all the fields each year at a rate of 15-20 sacks per tomna.
- They do not regard the idea of green manuring with any favour although they use dry vegetable refuse mixed with dung.

(iii) They are very conscious of minor regional differences in soil and climate and regard the parcellated holding of selected land much more important than convenience of working a consolidated holding e.g.
- 'earliness' is associated with coastal situations and "early tomatoes will not come up in Żebbuġ".
- soils are classified as follows:
  - 'ħamrija' (red) is good for all crops
  - 'abjad' (white) for cereals and tomatoes but not for potatoes.
  - 'sewdina' (grey) for sulla and tomatoes.
  - 'tafli' (clay) poor for green crops.
  - 'ħirbi', an intermediate soil, easy to work.

The differences between these types and the presence or absence of nodule beds, saline layers etc. are held to be sufficient justification for rental differentiation as between fields and parts of fields.

This articulate consciousness of environmental variations even in this case reinforces conservatism and much more importance is attached to such natural 'controls' than to crop strains.

*159 232 (iv) Cattle are well housed and fed according to yield. Very vague about balanced feeding and rely on traditional greens, beans, hay and cake. Nevertheless in the spokesman's own words they are aiming at 'better management of the cattle rather than more animals'.

*159 829 232 242 (v) In some ways, the high standards achieved using traditional techniques are proving a barrier to further technical advances, e.g. the cattle are relatively free from disease and therefore more trust is placed in the expertise of the syndicate than in the 'book-knowledge' of a vet., e.g. whatever experts may say, any crop innovation must be demonstrated successfully and in the <u>immediate</u> locality.

* H. General.

159 472 451 (i) In some of its characteristics this type of syndicate is not typical of Maltese farming systems. The partnership seems to derive historically from a line of large farmers and is now held together by the drive and ability of one of their number.

*159 472 451 181 (ii) Nevertheless if one ignores the partnership organisation one may use this case-study as illustrating the practises and modes of thought of the most highly developed type of Maltese farmer.

- Characteristically there is a marked reluctance to give any financial information. Official records and returns are even less accurate than in the case of smaller-scale and more ignorant cultivators. Some records are certainly kept by the group but individual shares in gross income do not seem to be formally arranged. There does no seem even here to be either a monetary evaluation of their own labour or any assessment of net profit as distinct from gross income. Receipts appear to go into a central treasury which is drawn on by agreement over each specific case.
- Although there is present considerable financial acumen this is a matter of peasant shrewdness rather than any real commercial understanding.

*159 433 181 ● 242

- Yields are good - tomatoes will average 15 qantar per tomna, grapes 10 qantar per tomna, but these are attained by the careful application of proverbial wisdom and not by the possession of better scientific understanding than their neighbours.

*159 181 232 242

- In spite of the fact that the syndicate's capital reserves and their practical abilities are considerable, the physical environment dominates their actions. They are not prepared to experiment themselves and they look askance at those who are. One has an unhappy feeling that as already noted, their very success with traditional methods inhibits their acceptance of new ones. Thus even with farmers such as these there is a great mental gulf between them and typical farmers of Northern Europe and between them and their advisers.

*159 472 464 CASE IX : Antnin & Gakbu (A long-established partnership of two unrelated stock farmers now engaged in cows' milk production.)

Both these men are married and occupy houses in the same street. They have operated as a single farming unit during their whole working lives and it is not always clear whether even they can distinguish which property belongs to each. The teenage eldest sons of each man work full-time with their fathers whose wives occasionally assist with field-work.

* 159 178 234 Some few years ago the two friends had 36 goats. By 1958 only two remained and the emphasis had swung to cows' milk production. In 1956 they had about 18 cows; eighteen months later the joint herd had doubled in size. Their aim has been to build up as large a herd as possible as quickly as possible in order to benefit from the guaranteed price offered by the M.M.U. for milk produced. The two men insist that they are at the same time striving to build up a

159 Their failure to profit contrasts with the success of the
824 Gozitan milk producer, Case I.
234 The partnership's main aim is to accumulate cattle with-
[433] in the current artificial economy of milk production. There is no thought or care for what might happen if the subsidy were removed or even reduced.

CASE X : Ġamri (An arable farmer in partnership with a brother and engaged in diversified production.)

159 Ġamri is an arable farmer, specialising in fruit. He
24 has a couple of goats and sheep, a mule, and is keen to
23 acquire more pigs for fattening. Most of his effort is how-
427 ever centred on the land holding which he and his brother work
472 in partnership. Some fifty-three tmien are rented by the two brothers together while Ġamri himself rents a further ten tmien. About two-thirds of the land (17 plots) is owned by private landlords, one sixth belongs to the Church, one tenth to the Government and the remainder - about an acre - is owned by Ġamri's father.

159 The working partnership of the two brothers is of many
462 years' standing. The brother's eldest son now works full-
464 time alongside the two men. The brothers say they could not
241 cope with any more land than they are working at present. They share the common view that hired farm labour is both uneconomic (at 25s or more for an eight-hour day) and inefficient. The land worked by the partnership is dry (baghli) apart from two irrigable (saqwi) tmien. In 1957 it was utilized as follows:

[311]

Fruit and vines	21 tmien
Cereals and fodders	18 tmien
Fallow, unproductive, or sub-let	13 tmien
Potatoes	6 tmien
Other vegetables	5 tmien

159 Apples are the biggest single cash crop and the overall
245 success of any year depends on them. They were introduced
242 to the district by Ġamri's father some years ago and now grow in large numbers in a sheltered valley along with lemons, oranges, mulberries, figs, cherry-plums and other fruits. The produce is good but is usually affected by some pest or disease. The most prevalent of these is a boring grub. Ġamri and his brother spend a large part of September and October simply gouging this pest from the trunks of affected trees - with penknife and piece of wire. They regard this time-consuming and uncremunerative task fatalistically. But of late Ġamri has been wondering whether the same result might not be achieved in a fraction of the time by the application of some spray. He knows nothing of the details of this and is more than a little doubtful of possibilities.

159 Since 1953 Ġamri and his brother have expanded their
245 area under vines, buying seedlings from the Government Farm
[435] at 1d each. They consider vines the most profitable of crops, especially grapes for wine since these can be picked

*159 433 435 February when prices start at c.9d a head rather than later in the year when they drop to c.4d a head.

(iv) A variety of other vegetable produce fruit and grapes are sold in small quantities.

(v) Stated cash income - £200 per annum. Regular income comes from arable products. Every two or three years sales of young heifers in calf bring in sizeable sums e.g. in 1958 one such Friesian heifer was sold for £170 and a 3-month old calf bought for £61.10.0.

G. Husbandry.

*159 241 (i) Land:

(a) Main concentration on maintaining high yields of vegetable crops on irrigated land, usually by heavy manuring rather than rotational farming. In 1956 - used all dung from own livestock.
- Purchased £100 worth of dung from an urban milk producer.
- Applied 25 bags sulphate of ammonia @ 25/- to 27/6d a bag.
- Collected several cartloads of mixed refuse from Government centre.

Dung applied directly to cucurbits, but mixed with refuse and sulphate of ammonia otherwise.

(b) On non-irrigated land crop sequence usually cereal, leguminous fodder, potatoes, except on poorest land where potatoes alternate with barley.

[461] (c) Irrigation takes much of labour-time and water is applied empirically. A typical early potato crop will be watered 13 times, each watering by channel-end-bed control taking 1½ days.

[242] (d) Chemical treatment of the crops is accepted but not understood. Since 1953 Chloride of Lime and Copper Sulphate sprays have been used but the farmer is not at all sure of why they should help - the sprays are applied "when the potatoes show a blackness". This exemplifies a general attitude that certain pests and diseases can be treated with one or another of the "medicines" but considerable mystery surrounds the methods of application and the processes concerned.

(ii) Seeds:
Relies entirely on own plant strains except for potatoes. Is prepared periodically to buy Arran Banner seed-potatoes and in 1958 plucked up enough courage to try a new strain - Eigenheimer.

*159 23 (iii) Livestock:
Only interested in rearing heifers which are fed traditionally on a little grain, green fodder including "haxix", sulla, hay and beans.

H. General.

*159 241 433 435 [465] (i) An example of better kind of intensive market gardener. It is unlikely that without a complete re-organisation of his farming life any more irrigated land could be worked. At present casual labour costs of 15/- to 25/- a day, expansion of the labour force would be impossible. The only relatively simple economic improvement that could be made is the raising of quality standards and to a limited extent yields. In Malta there is no effective price differential between products of different quality, and the local market is very quickly saturated. This cultivator and others like him vaguely realise the predicament and pin their faith on minimum price guarantees, which in fact have little to do with the case.

*159 451 (ii) The farmers children keep rough accounts but only of the main items of disbursements and income. This is one of the few farmers who occasionally put a monetary value on his own labour. That of the family was taken for granted.

000 was taken for granted.

*159 178 242 (iii) Reasonably prepared to try new crops if they are proven in his district. Not prepared to accept anything technically as revolutionary as a wheelbarrow mainly on the ground that "it is not used here".

CASE XII : Ċenzu (A cows' milk producer and village weighman.)

*159 557 241 234 [463] Ċenzu is an example of one type of part-time farmer in Malta and Gozo in that his farm is the more important of the two occupations for his livlihood. His work as licensed village weighman is important both because of the extra income which it brings and on account of the social standing which goes with the office. He is a shrewd and literate man who earlier in his life also engaged in importing and other business. He was one of the many farmers able to build up a substantial reserve as a result of the 1939-45 War. The house is spacious and well-appointed by local standards and Ċenzu and his small family enjoy comfortable living conditions. His pre-War premises were damaged during the War and he received some £1800 official compensation to which he added a further £1200. This money was put towards the new house and towards the costs of building up his present herd of 12 cows, a bull and 10 goats. The milk produced and sold to the M.M.U. provides the basic element of his income but he also grows cash crops for sale. In the 1956/57 winter a third of his crop area was devoted to fodder. This increased to 74% in the following winter but, given a substantial improvement in the prevailing prices for cash crops, it is likely that he would devote more space once again to those and buy in a larger part of the fodder needed. In 1957 he purchased over £1000 worth of fodder and received about £1350 for milk sold during the same period.

*159 234 434 241 [432]

*159 829 484 [451] Unlike most farmers he keeps detailed records of his income and expenditure on the farm and animals and on the weighing side of his business, but he remains unwilling to discuss his revenue with even apparently trusted outsiders. This reticence seems to relate to the traditional independent outlook of the farmer, rather than to any anxiety to hide his accounts from a sense of guilt. He was prepared to join the Malta Milk Company (Il-Kumpanija Maltija tal-Halib) because he saw this as of some benefit to the milk producer in his relations with the M.M.U. authorities. But he has never been a member of a farmers' union and is clearly not interested in them although he thinks "A union might be a good idea". He shares the typical failure to appreciate the rôle of an efficient Union. Neither is he interested in joining a producers' Co-operative (Section 4).

000 As village-weighman he has a high social standing in the

*159 [464] - to find farm labourers even at 25 to 30/- a day.
- Occasional hired help at harvest time.

F. Production and Sales.

[434] - Main profit from tomatoes, grapes and potatoes. Subsidiary income from vegetables.
[433] - Attempts to space out production and sales by using many different varieties and storing, e.g. potatoes
[251] until prices are high.

G. Husbandry.

*159 241 43 (i) - Potatoes: three crops annually on best land.
- Artichokes: replanted every 4 years.
- Tomatoes: seed beds attached to irrigated plots carry many varieties.
- Melons: has experimented successfully with seed sent by relative in Canada.
- Cauliflowers: 4 crops between August and March, earliest sold before heads are formed.

(ii) - Manure brought from Luqa: 4 truckloads - £22 plus £8 for carriage will last one year.
Also uses town refuse.
- Copper sulphate spray for potatoes, paraffin spray as weed killer.

(iii) - Has recently added to holding by reclamation of wasteland. Constructed a 2-tmion field, soil for which cost £150 (20 truckloads) and transport £50. This field returned £60 worth of potatoes in first year, £35 of tomatoes in the second. In autumn 1957 was preparing to repeat the process.

(iv) - Irrigated land rested under sulla every fourth year.

H. General.

*159 *242 [463] [465] An unusually proficient part-timer cushioned by income from position as camp caretaker (£5.12.0 per week when camp not fully occupied). His job appears to leave him plenty of time to devote to his holding. He is willing to experiment and take risks, though experiments are concealed from his neighbours until proved successful. Has a lively appreciation of how to obtain best returns from his produce; very much au fait with market conditions.

*159 434 [451] Keeps fairly careful accounts and, according to his own statements, makes a profit of £250 p.a. from farming:

Receipts from produce	£450
Labour costs	£ 50
Seeds, manure, transport	£150
Profit	£250

Value of produce consumed by family £30.

His two jobs have made him appreciably more prosperous than his neighbours. Without the subsidiary income from caretaking his financial position would be extremely precarious. As it is he is able to amass a considerable [454] capital reserve.

PART 2. Heavy Tractors and Maltese Farming.

*159 157 829 CASE XIV : Ġanni (A young, progressive contract-plowman, with heavy tractors and other mechanized equipment.)

Ġanni is a bachelor in his late twenties. In most respects he is quite atypical of Maltese farmers today but his work and attitudes illustrate most vividly the economic, technical and social problems facing agriculture and the rural community in Malta.

His youth, his knowledge of written and spoken English, his first hand acquaintance with Australia, the United Kingdom, Italy and other countries, his belief in mechanization as the way to make money in Maltese farming, his social

8:Brockman T-5 (no date) 1938
EZ6 Malta EZ6

Maltese	*English*
"Red sky at evening, harness your mules. Red sky at morning, herd your beasts."	"Red sky at night, Shepherd's delight. Red sky in the morning Shepherd's warning."
"Ill weather comes, ahead or astern, when the cat sneezes."	"The cat washes herself before stormy weather."

Often it appears that sheer nonsense is mixed with sound common sense. Typical of the mixed "sense" and "nonsense" is the following:

"The first autumnal produce of the wild fig is called by the Maltese *Barru*. A second crop which takes place in winter is supposed to be due to the outcome of the first produce. This is called *Carru*, and is supposed to bring forth the third outcrop which appears in spring time and is recognized as the *dukkar* or real fertilizer of the fig. This fruit is cut and hung up in pairs on the bough of the fig tree.

"The male fruit (*dukkar*) is usually full of a colony of minute winged insects by the produce of which, the Maltese husbandman identifies the real fertilizing fruit.

"The pomegranate is supposed to be fertilized by the flowers of the wild parsnip, and for this purpose bunches of these flowers are thrown over the pomegranate tree when in flower. *Dakra*, probably from *dakar* = to fertilize, is the name given to the wild parsnip by the Maltese husbandman.

"The male flowers of the wild carob-tree (*baghal*) are thrown over the branches of the female plant to favour impregnation.

Small pieces of coarse stone are still hung up in the jujube-tree with a view to securing a good produce.